



**Sol Solar Power Plant Project and  
Luna Solar Power Plant Project  
Americas Clean Energy Fund II:  
Social&Environmental Due Diligence**

**January 2017  
Prepared by SCLEA**

## **1 INTRODUCTION**

Americas Clean Energy Fund II (AEF II CE) has the opportunity to acquire the majority part (51% of shares) of two independent Photo Voltaic operating projects, about 3 MW each, located in the vicinity of the city of Vicuña, IV Region of Chile, some 500 km North from Santiago. This is the Social and Environmental Due Diligence Report and was prepared by SCLEA in order to have the projects approved as Eligible Clean Energy Investments.

The Proposed Investments described in this report are:

**TABLE 1: PROPOSED INVESTMENTS**

Proposed Investment	Category	Type
Sol Solar Power Plant (Sol PP)	1	Electricity generation from renewable sources (wind, solar, geothermal, hydro, wave or tidal)
Luna Solar Power Plant (Luna PP)	1	Electricity generation from renewable sources (wind, solar, geothermal, hydro, wave or tidal)

Both projects are independent to each other, they are very similar and were erected and commissioned in parallel. Sol PP is owned by the Chilean company Parque Solar Sol Del Norte SpA, incorporated in August 2012. This company was divided in May 2014 to create Parque Solar Luna Del Norte SpA, which is the owner of Luna PP. Each company is owned by Proyectos ECOSolar Chile SPA (51%) and Danish Climate Investment Fund I K/S DCIF (49%). Proyectos ECOSolar is part of ECOS Group, a Swiss investment fund, and DCIF is managed by Danish Investing Fund for Developing Countries IFU. Annex A includes some information about these funds taken from their web pages.

Construction and erection was made by IM2, a Spaniard company, which also was awarded with a contract for the operation and maintenance of both projects. Annex B includes information of projects taken from IM2 web page.

AEF II CE is acquiring the participation of ECOSolar, which is 51% of each company.

## **2 OVERVIEW OF SCLEA'S REVIEW**

This SEDD is based on information provided by the seller, information gathered by SCL during a site visit on December 20, 2016, interviews with Mr. Fernando Zuñiga from ECOSolar and Mr Diego Muñoz and Jose



Miguel Alapont from IM2, public information and a legal due diligence contracted by SCLEA with Cubillos Evans, a Chilean well known law firm.

Both projects are currently under operation and in compliance with their environmental permits. No social conflicts were detected.

This report doesn't consider information regarding technical and financial due diligence that SCLEA is carrying out separately.

### 3 PROJECT DESCRIPTION

#### **Rationale**

The transaction consists in the purchase of ECOSolar's shares in two operating photovoltaic power plants of 2.96 MW each. The assets are allocated in two independent investment vehicles, Sol del Norte SpA and Luna del Norte SpA. The owners of these companies are Ecosolar and DCIF, with an interest in each investment vehicle of 51% and 49%, respectively.

This investment is in line with the strategy of seeking positions in distributed renewable generation, with special focus on PV projects, for the following reasons:

- Small projects with low risk and fast development;
- Direct electrical connection to consumption centres through distribution networks eliminating transmission tolls and reducing distribution costs; and
- Preferential energy tariffs defined in the electrical regulation.

Particularly, this transaction represents an attractive option in the above described strategy because allows SCLEA to enter the solar distributed generation market at a competitive price with an operating asset.

#### **Asset Description**

The plants are located in an agriculture area in the commune of Vicuña, Coquimbo Region, Chile. Both sites can be accessed using public roads, and are located approximately 120 km to the east of La Serena (Coquimbo Region Capital). Plant location is shown in Figures 1 and 2.

**FIGURE 1: PV PLANTS GENERAL LOCATION**



**FIGURE 2: PV PLANTS LOCATION**



The plants are photovoltaic fixed tilt power stations currently in operation. The following table summarizes the characteristics of the power plants:

Characteristic	Sol del Norte	Luna del Norte
Commercial Operation Date	Oct – 2015	Oct – 2015
Site area, ha	5.0	4.5
Power DC, MWp	3.34	3.34



Power, MW AC	2.96	2.96
Modules	TSM-255 PC05A Trina, 13089 Modules	TSM-255 PC05A Trina, 13089 Modules
Inverters	SMA Sunny Central, 4 Inverters	SMA Sunny Central, 4 Inverters
Tracking System	No tracking, fixed structure	No tracking, fixed structure
Connection Voltage, kV	23 kV	23 kV
Connection Point	Peralillo Circuit (on site)	Peralillo Circuit (on site)
2016 Yield, kWh per year	5771	5716
Guaranteed Performance Ratio, %	80.9	80.9

Both projects have independent connection to distribution grid through 23 kV connection lines and connection is made inside each site.

Sites for both projects are secured by means of long term (30 year) rental agreements. Accesses are to public road connecting Vicuña and Villaseca. Before the projects, the land had an intensive agricultural use (vines) and there are no houses on there.

The picture below corresponds to Luna del Norte power plant; both stations has similar characteristics and are connected to the electrical distribution system directly on each site.

**FIGURE 3: LUNA DEL NORTE**





## Operation & Maintenance

Neither Sol del Norte nor Luna del Norte have personnel directly contracted. Plants operation and maintenance is done by an outsourced contract with IM2 (<http://www.im2solar.com/>), a Chilean brand of a Spaniard company with experience in EPC and O&M of PV power plants. The contract includes all activities commonly required for the operation and maintenance of PV power plants such as inspections, measurements, cleaning and other actions required for proper plant operation. Additionally the O&M contract includes an availability and performance guarantees.

The plants are operated remotely from Santiago, Chile. One person is locally available if required for any contingency solution and in charge of the cleaning routing of the PV modules and debris control. For other maintenance activities (electrical inspection, part replacement, etc.) subcontracts with local companies are in place.

Administration and accounting is contracted with Gestion Global and there is another contract with SICUT IGNIS for the back office work, billing and commercial management.

## 4 ENVIRONMENTAL AND SOCIAL ANALYSIS

### 4.1 RISK CATEGORIZATION AND RATIONALE

The proposed investments are operating projects located in Peralillo sector, about 5km away from the city of Vicuña, IV region, Chile. The Luna Solar Power Plant is a 2.98MW PV power plant located in Elqui Valley, installed in 4.5 ha area surrounded by intensive agricultural fields, based mainly on grape crops for wine and pisco (grape liquor) industries. The energy produced is injected to the distribution system grid through a 23kV medium voltage line with 100m extension. There is a small community nearby the projects named Villaseca, belonging to Vicuña municipality.

On January 18<sup>th</sup> 2013 Parque Solar Sol del Norte SpA, presented a “Carta de Pertinencia” for Luna project to the Environmental Authority which concluded that the Luna project did not have to enter to the Environmental Impact Assessment System (SEIA) and this was confirmed by letter N°0029, dated January 18<sup>th</sup> 2013, from the Environmental Authority, based on its installed capacity that was lower than 3 MW.

The Sol Solar Power Plant is almost identical to Luna. Its installed capacity is 2.98 MW, the site is a 5 ha lot about 150 m (fence to fence) from Luna and it is connected to the distribution grid in a similar way. Its “Carta de Pertinencia” was presented on March 24, 2014 and was approved by letter N° 0093, dated April 02, 2014.

Projects have very limited social and environmental impacts and risks. They have no moving parts, no Indigenous Communities in the zone, no people resettlement, no air or water contamination and very limited personnel. Nevertheless, considering that the capacity limit for not going to a normal environmental assessment approval is 3 MW and each project has 2.98 MW installed capacity, although improbable, there is the risk that Environmental Authority considers that both solar plants are part of the same project and requests a normal environmental approval process. Because of this, both projects has been classified as Category B Medium Risk Projects.



## 4.2 APPLICABLE PERFORMANCE STANDARDS AND GAP IDENTIFICATION

The Performance Standards that are relevant to this investment are:

PS1: Assessment and Management of Environmental and Social Risks and Impacts;

PS2: Labour and Working Conditions

PS3: Resource Efficiency and Pollution Prevention

PS4: Community Health, Safety and Security

### **PS1: Assessment and Management of Environmental and Social Risks and Impacts**

#### *Environmental and Social Assessment and Management System*

Each company has an executed Shareholders Agreement which includes the commitment of partners to operate the company in compliance of IFU Sustainability Rules, including an Action Plan to address relevant sustainability issues and an Annual Sustainability Report. Although Ecosolar and IM2 said they are fulfilling all local regulations and IFU rules, we haven't found written evidence of it. Moreover, the 2015 Annual Sustainability/CSR Report does not mention documents but meetings to deal with Sustainability issues. Annex C includes 2015 Annual Sustainability/CSR Report.

According to information revised, Sol PP and Luna PP are managed by ECOSolar, which is controlled by a Swiss family office ECOS Group. ECOS Group manages several Private Equity Investment Vehicles, with a focus on equity investments in projects and companies mainly in Latin America, in selected Sustainable Development segments (Renewable energies, clean technologies, etc). As described on their webpage, they are committed to sustainable principles of triple bottom line (social, environmental and financial) and business ethics to generate returns to the group and portfolio companies but also positive impact to societies where they operate. On the other hand, IFU is an experienced Fund that offers capitals for climate investments in developing countries and emerging markets. IFU invests in projects that, directly or indirectly, contribute to reducing GHG emissions. Considering that the investments for both investors are based on principles of sustainability, GHG reduced emissions, etc., ECOSolar aims to extend these principles to their projects.

In this case, Sol and Luna projects are small projects with reduced environmental and social impacts and risks, as stated by their environmental permits.

As perceived by SCLEA during site visit and revised information, both projects don't have claims, pending legal issues or any not-compliance to be solved. The contractor IM2 (spanish origin company) declared that they are in compliance with local regulation and European standards for environment, OHS and social matters, as described in their web page regarding to these projects.

Considering the information before mentioned, there is no evidence (documents) of an ESMS or at least an Environmental and Social Plan, to assure compliance with local regulations and aligned with IFC or



equivalent Guidelines and PS. It would be also required to identify the applicable environmental and social regulations to projects and compliance registers.

#### *Identification of Risks and Impacts and Management Programs*

Considering the environmental risks and impacts, the environmental permits for each project pointed out they should not have to enter to SEIA due these projects are below 3MW required by the SEIA. Also, it is mentioned the projects are into a Touristic Interest Zone (ZOIT) since Vicuña and Paihuano comunas (counties) are declared as ZOIT because these zones have landscape attractions, agrotourism, handcraft works, etc. The authority sentenced the works and activities of these solar power plants are no susceptible to cause environmental impacts over the ZOIT since were constructed on small intensive agricultural developed fields. No matter the few environmental impacts and the compliance with regulations required, it was not perceived whether was at least an Environmental Management Plan to identify environmental obligations and assure compliance. As reviewed by SCLEA, the contractor IM2 when built these projects did not cause impacts to the ground and the resultant residues were recycled and disposed with companies environmentally authorized. Also they mention on IM2 webpage they reduce 6.537 t CO<sub>2</sub> annually with these PV power plants.

Regarding to social risks and impacts, due the small scale and nature of the operating projects, they don't generate noises, odours or water discharges that may affect the surrounding communities. As evidenced during site visit, the project is indeed well perceived by the community, favour good relations with them and authorities. No claims are registered either. Through the contractor IM2, they have met some activities with communities such as toy donations for "Kids day", collaboration with neighbourhood union of Villaseca for their 50 years anniversary, irrigation canals cleaning for surrounding fields, etc. From the information gathered and revised, there was no evidence of Indigenous People identified or affected by the projects.

As there are O&M activities, electrical works, it hasn't been possible to evidence if they have incident records or emergency/contingency procedures applicable in case. The contractor is the responsible for the O&M services with the help of an electrical subcontractor, they inform to ECOSolar any activity related to O&M. They pointed out they are in compliance with local regulations on risks prevention.

#### *Organizational Capacity*

As reviewed on documents and during site visit, there is only one person on the site, who is responsible for the O&M activities for both projects. It wasn't possible to perceive if there is currently at least an specialist responsible for E&S matters. It is highly recommended to identify within the managing structure an specialist with E&S responsibilities and competent to implement, monitor and report regarding any issue of these aspects.

#### *Emergency Preparedness and Response*

For the operating projects, and based on information provided, emergency preparedness and response should be prepared following the development of the detailed engineering design of the facilities and additional analyses of hazards and risks associated with the operation of the PV power plants. Document such as an emergency preparedness program for all potential accidental and emergency situations for the projects wasn't possible to review. As commented by the representative of ECOSolar, they have one but couldn't be seen by SCLEA.



### *Monitoring and review*

The environmental and social monitoring framework should be based on the stated at the environmental permits for each project. Concerning on potential affection to touristic resources of the ZOIT and their conservation, residues that may be produced from maintenance activities, occupational health and safety performance, among others, should be consider to monitor following compliance with local regulations and with applicable EHS Guidelines.

### *Client's Stakeholder Engagement*

The projects were presented and communicated to the local communities, attending any comment, request and complaints. The projects were well received by the communities, as described by contractor and the representative of Eco Solar. The current point of contact to any comment, request or complaint is the contractor who is on-site for both projects. As perceived during site visit, there was no formal mechanism established to reach ECOSolar and have a direct communication with communities. It is requested to implement a Grievance Mechanism accordingly to requirements of IFC.

### **PS2: Labour and Working Conditions**

As perceived from the information provided, the operation of the projects is managed by a third party contractor (IM2) and constantly informed and reported to the managing company, ECOSolar. It wasn't available to verify whether or not there is a HR management system, including policies and procedures covering direct staff and contractors. All labour requirements for contractors and subcontractors should be included in the legal agreements. HR policy commitments and procedures should grant freedom of association both for direct staff and contractors and full alignment with Chilean labour laws.

### *Occupational Health and Safety (OHS)*

The contractor should have implemented an OHS management plan to address their specific OHS risks and impacts for operation stage. Frequently reports with OHS performance indicators should be prepared and submitted to Eco Solar to demonstrate the project performance. It wasn't possible to evidence such plans nor indicators related (ie.: incidents records, etc.) in accordance with local regulations and IFC PS. It would be also required to verify the OHS regulations and standards applicable to projects and their compliance.

### **PS3: Resource Efficiency and Pollution Prevention**

Due the small scale of these projects, they are not susceptible to cause environmental impacts since they were constructed on small intensive agricultural developed fields and have low resources consumption (water, energy) and the projects don't store hazardous materials during operation. Because of this, they don't need to implement a resource efficiency plan or a pollution prevention actions for the projects.

### *Greenhouse gases*

The O&M contractor, IM2 mention the solar power plants reduce 6.537 t CO<sub>2</sub> annually, but there is no evidence of calculation registry or if the emissions reduced are related to these power plants. It should be conducted a GHG emission calculation in order to be reported annually.

### **PS4: Community Health, Safety and Security**





There are communities nearby the projects (Vicuña, San Isidro), but only one closer to projects sites: Villaseca. The medium voltage line goes along the access pathways to projects to connect to the distribution system just outside project fence. As reviewed from the information provided and site visit, the projects have implemented security CCTV but it wasn't able to verify the applicable contingency plan for both projects, with specific procedures to address safety and emergency preparedness and response considering potential risks and emergency situations that may affect workers and immediate community as Villaseca. The coordination and communication with local authorities and communities should also be part of the plan.



## 5 SOL SOLAR POWER PLANT AND LUNA SOLAR POWER PLANT CORRECTIVE ACTION PLAN

Considering the SEDD results/conclusions and the information and reports provided by the sellers, the Project considers the following actions for implement:

Applicable Performance Standards	Gap / Risk	Recommendations	Priority	Responsible	Project cycle phase / Deadline	Completion Indicator
1, 2, 3	There is no evidence of environmental, social and safety regulations compliance.	Identify all environmental, social and safety regulations applicable to the project and manage for their compliance	High	SCLEA	3 months after closing	Document with environmental, social and safety regulations applicable to the projects and the plan for their full compliance.
1, 2, 3	There is no evidence of a formal written SEMS, Action Plan or sustainable policy implemented for the operation of the solar power plants.	An SEMS must be established according to characteristics of the projects, incorporating the following elements: (i) policy; (ii) risks and impacts identification and assessment; (iii) management programs; (iv) organizational capacity and competence; (v) preparedness and response to emergencies; (vi) participation of social actors, and (vii) monitoring and evaluation. Develop a policy on social, environmental and risk management, which should be part of SEMS. Occupational Health and Safety management system as well as incident tracking and follow up, among others, will be included in the SEMS.	High	SCLEA	8 months after closing	Established SEMS with defined structure and related documents for its implementation.
1, 3	There is not a clear organizational scheme for monitoring the environmental and social aspects of the operations. This responsibility seems to be spread among owner and operator, with	A structure of staff for managing the E&S risks and impacts, and SEMS must be defined.	High	SCLEA	6 months after closing	Defined and implemented an organizational structure for managing the E&S impacts and risks of



	no clear structure, responsibilities or procedures.					the project, and within the SEMS.
<b>2</b>	No evidence of HR policies and procedures	Formulate guidelines for implementing a Human Resources Policy and related procedures	Medium	SCLEA	4 months after closing	Human Resources Policy and procedures formulated And approved by the companies
<b>3</b>	GHG balance and reporting	Develop an annually calculation of greenhouse gases (GHG) saved, using Proparco's or IFC's tools	Medium	SCLEA	Annually reported	GHG emissions included on Annual Report to the Fund.
<b>1, 3</b>	E&S cumulative impacts	Conduct an E&S assessment for potential cumulative impacts considering both projects as one operating plant	Medium	SCLEA	6 months after closing	E&S assessment report

---

Eduardo Vicuña B.  
S&E Officer  
Americas Energy Fund II Clean Energy L.P.





## **ANNEX A: OWNER FUNDS INFORMATION**

A1      ECOS GROUP



A2: IFU



## **ANNEX B: IM2**



**ANNEX C: 2015 ANNUAL SUSTAINABILITY/CSR REPORT**